DMX booster

2 channel

10100

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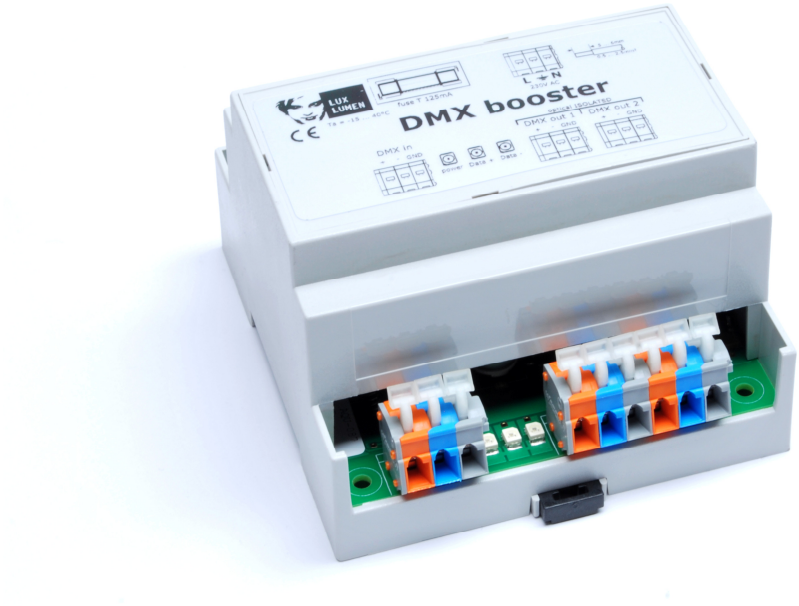
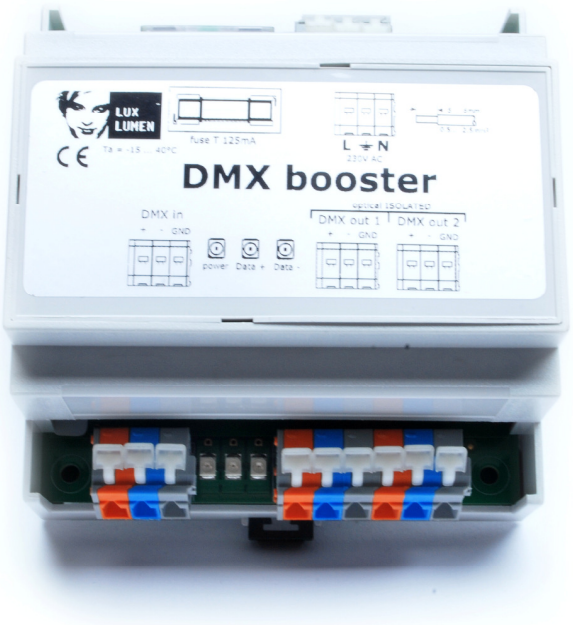
1 Picture

1.1 General



1.2 Top



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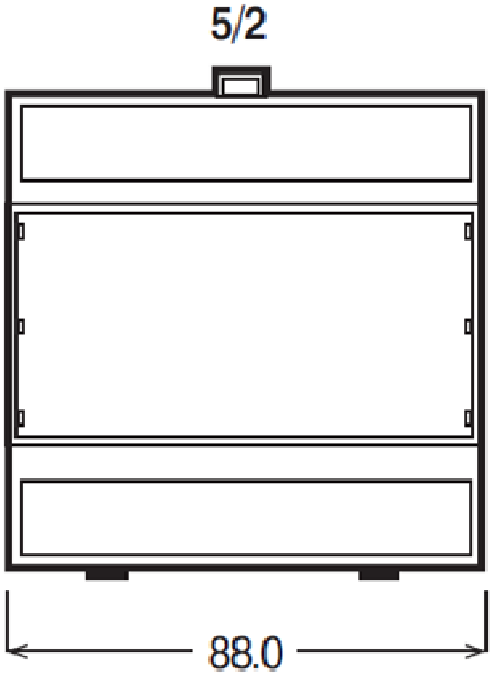
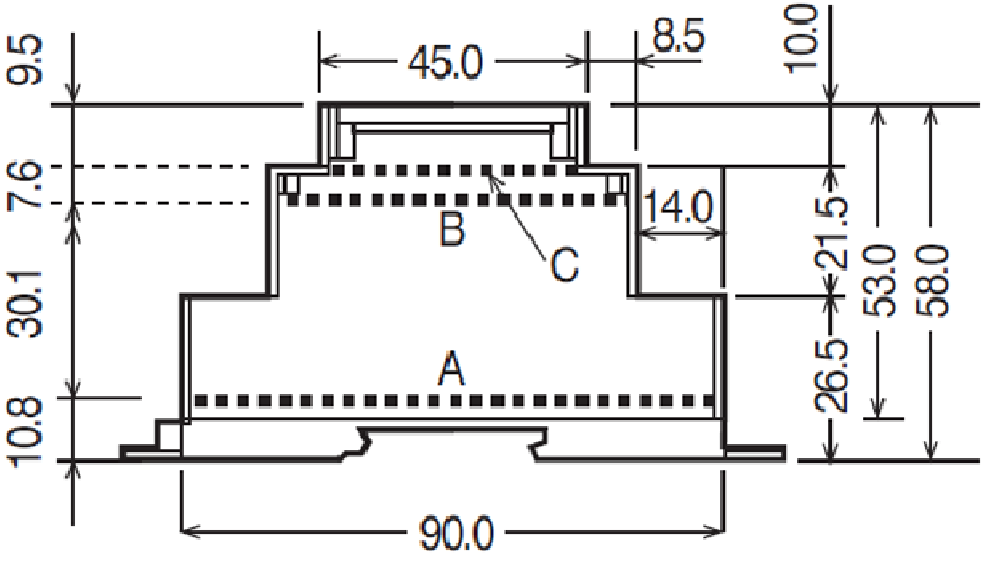
2 Dimensions





Please note, in dimensions given the din-rail is not included.

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3 Safety information

Before installing, powering up, or servicing this DMX booster it is highly recommended that you read this manual and ensure yourself that you completely understand its content. Observe the safety precautions in this manual. Install and operate the DMX booster only as described in this manual and in conformity with local regulations. If you have any questions how to operate this product safely please contact your point of sale.

3.1 Symbols

Following symbols are used to identify important safety information on the product and in this manual.

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3.2 Protection from electric shock

This DMX booster is connected with live power so take all precautions to prevent injuries or electrical shocks. Shut down the power of the complete installation before carrying out any installation or maintenance work.

Please note that all metal parts used in the enclosure where this card is used are firmly grounded.

If any cable, seal or housing is damaged, cracked or reformed, disconnect the power of the installation immediately.

The DMX booster is only to be used in a proper housing conform to local regulations.

For any additional servicing, not described in this manual, please contact your point of sale.

3.3 Protections from fire and burns

Do not operate this DMX booster if ambient temperatures, inside its enclosure, is above 45 °C (113 °F). Please ensure yourself that sufficient ventilation around the card is possible.

Do not modify the card in a way not described in this manual.

Never bypass the fuse or change the fuse with another type or value as is rated in this manual.

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3.4 Protection from injury

Ensure yourself that all components, covers are securely fastened. Verify that the device is firmly clicked on a standard din-rail.

3.5 Disposing of this product

This DMX booster is manufactured in compliance with directive of the European community: waste electrical and electronically equipment. Please help to preserve our environment and ensure that this product will be recycled properly at the end of its life.

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4 Physical installation

Thank you for selecting this DMX booster as best solution in your setup.

Warning! Read the safety precautions in this manual before integrating this card into your installation.

Installation must be carried out by qualified professionals only.

Assure yourself that there is sufficient and unrestricted air flow around the DMX booster.

4.1 Unpacking

The following items are included in your package:

- DMX booster
- Carton box package
- Short form manual

4.2 Location and orientation

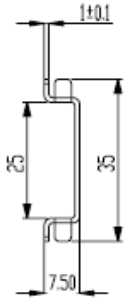
This DMX booster cannot be used without additional protective housing. The housing protects the user against electrical shocks and it is protecting the card against climatologically influences.

Please assure yourself that the cabinet which houses the DMX booster is according to local regulations and laws of the country of installation.

It is advised to install the card in horizontal position on the din-rail.

4.3 Mounting

The DMX booster can be mounted on a standard 35mm top hat din-rail. A typical section of this din-rail can be found here:



Note: Use end blocking clamps if necessary in your application.

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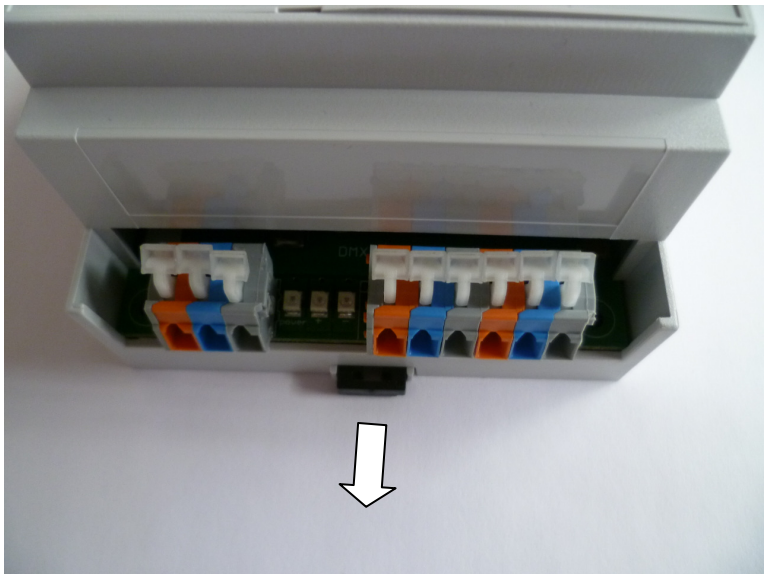
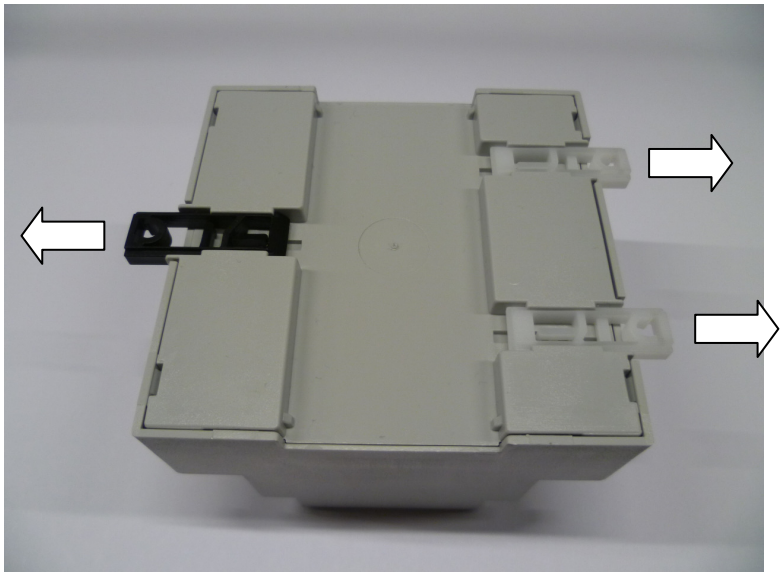
The DMX booster is designed for architectural purposes in fixed installation. To remove the DMX booster from the din-rail, gently move the mounting clip like indicated here:



If the product is used in a situation where heavy mechanical shocks can be expected, we advise to bolt the 2 channel DMX booster directly on the surface. Extract the three mounting clips as shown here. Use bolts and nuts M4 to attach the DMX booster with the mounting clips.



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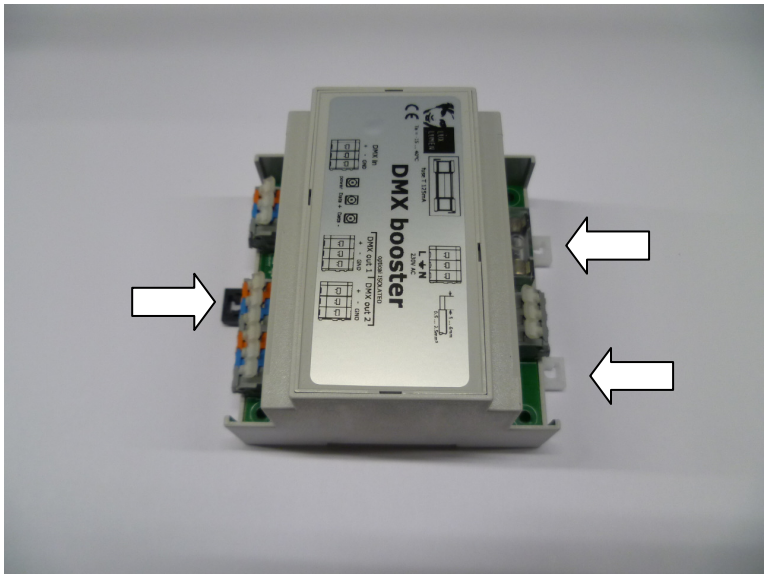
The three mounting holes can be found in the extracted clips below:



In case of problems or doubts, please contact your point of sale.

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5 External connections

5.1 AC power input

Safety precautions

Please take all necessary precautions to prevent electrical shocks since this product uses live power feed.

Specifications of the power input

The card operates fully functional:

- in the voltage range 220-240 Volt AC
- in the frequency range 50Hz
- Maximum power consumption is 4W

In case of doubts, please contact your point of sale.

Physical connections

The cable section of power feeding cable must be in the range like given in the table below:

Connection technology	**Cage Clamp®**
Conductor size : solid	0.08-2.5mm²
Conductor size: fine-stranded	0.08-2.5mm²
Conductor size: fine-stranded	0.25-1.5mm² (with insulated ferule)
Conductor size: fine-stranded	0.25-1.5mm² (with un-insulated ferule)
AWG	28-12
Strip length	5-6 mm/0.20-0.24 in
Conductor entry angle	0° to PCB

Note: Cage clamp® is a trade mark of Wago contact technology.

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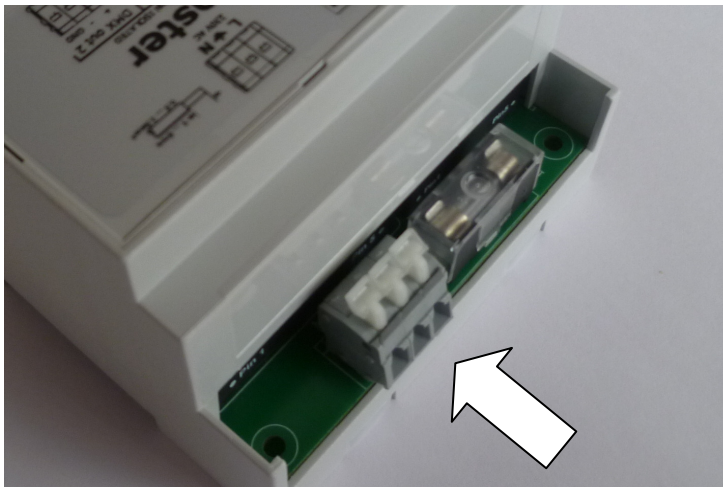
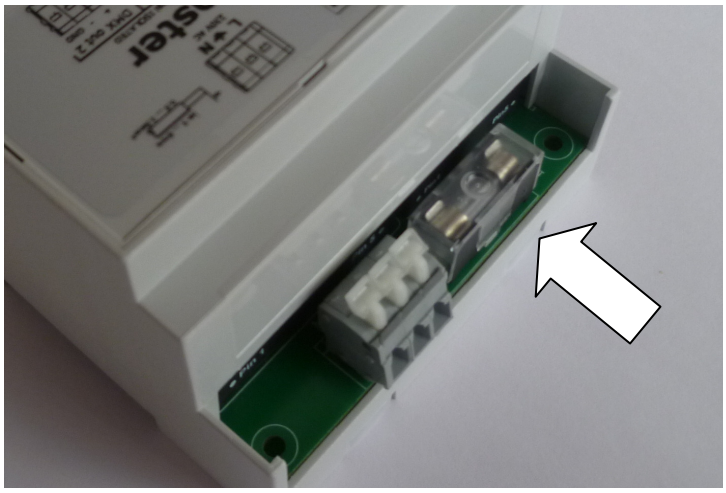
Location of power input-clamps

The power input can be found below:



Fuse located on board

A fuse to protect the card from overload or short circuit can be found beside the input clamp.



Only replace the fuse with 125mA rated, T type.

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5.2 DMX in and outputs

Precautions

Never connect other devices as a DMX transmitter or receiver to the input and outputs.

In case of doubts, please contact your point of sale.

Specifications DMX input and outputs

The DMX booster has one DMX input and two "active" DMX outputs. These DMX outputs are amplified and completely galvanic isolated from any other in/output.

Each output can feed max 32 fixtures.

The end of a DMX line should preferably be terminated with a 120 ohm resistor between + and – of the DMX line. For more information see 'termination of the DMX Signal'

The green LED's lights up when data signal is high. It doesn't validate if the data is a valid DMX signal.

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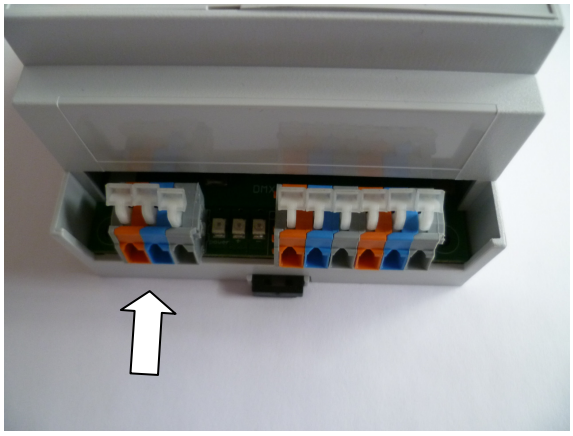
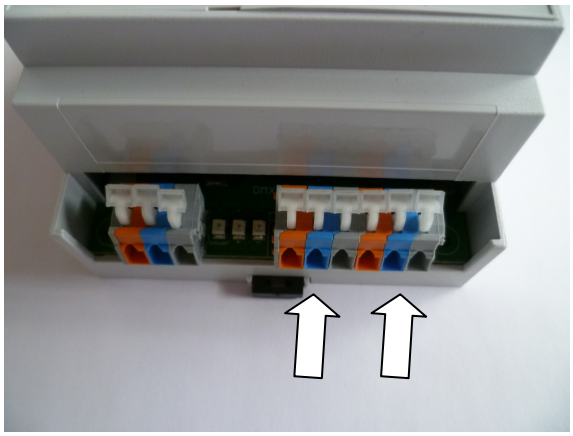
Location of the DMX input-clamps

The DMX input can be found below:



Location of the DMX output-clamps

The DMX outputs can be found below:



Physical DMX connections

The connection of the DMX wiring is made with Cage Clamps®

The cable section of DMX feeding cable must be in the range like given in the table below:

Connection technology	**Cage Clamp®**
Conductor size: solid	0.08-2.5 mm²
Conductor size: fine-stranded	0.08-2.5 mm²
Conductor size: fine-stranded	0.25-1.5 mm² (with insulated ferule)
Conductor size: fine-stranded	0.25-1.5 mm² (with un-insulated ferule)
AWG	28-12
Strip length	5-6 mm/0.20-0.24 in
Conductor entry angle	0° to PCB

Note: Cage clamp® is a trade mark of Wago contact technology

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Specifications cabling

The use of Cat.5 or Cat.6 cable is conformal the DMX 2004 by USITT in fixed installations. For more detailed information: www.usitt.org

The benefits are:

- Low cost of cabling
- Low cost of connectors
- Worldwide availability
- Fast application on site
- Very well known by electrical contractors
- Reliable connections

Suitable cable for transmission of the DMX-signal

Name of cable	Shielded or not shielded	Remarks regarding shielding	Max run length	Termination above run length (see 7.1)
CAT 5E UTP	Not	No ground connection at output terminals	250 m	100 m
CAT 5E FTP or STP	Yes	Connection of shielding to PE clamp of output terminals	250 m	100 m
CAT 6 UTP	Not	No ground connection at output terminals	250 m	100 m
CAT 6 FTP or STP	Yes	Connection of shielding to PE clamp of output terminals	250 m	100 m

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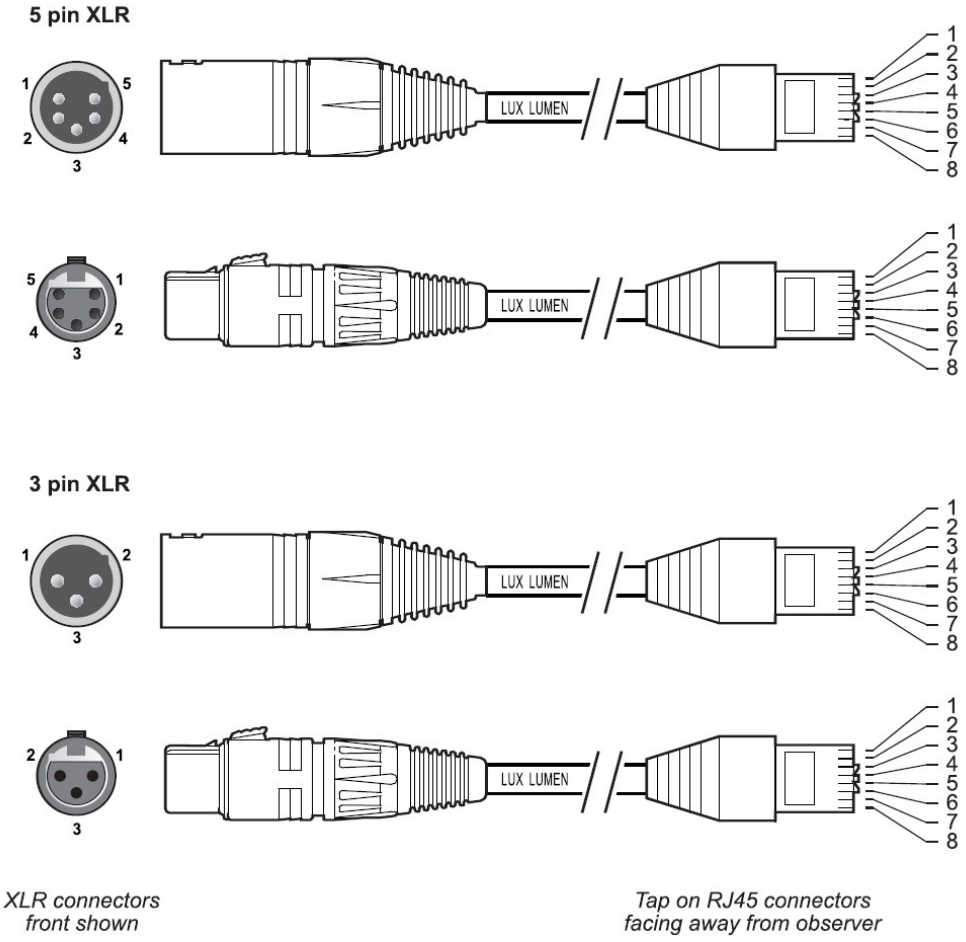
Pin layout of UTP to XLR connectors

XLR pin 1 wired to UTP contacts 7 and 8. UTP wire color usually brown and brown/white for shielding.

XLR pin 2 wired to UTP contact 2. UTP wire color usually orange for data negative connection.

XLR pin 3 wired to UTP contact 1. UTP wire color usually orange/white for data positive connection.



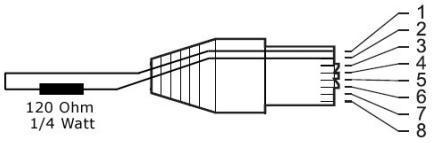
XLR connectors front shown

Tap on RJ45 connectors facing away from observer

Termination of the DMX signal

To avoid disturbance of the DMX-signal it is recommended to terminate the DMX-line at the last open 'through' connector at each physical DMX-line. This is done with an 'end plug'. This end plug consists of a 0.25 watt resistor of 120 ohm between pins 1 and 2 of the connector.

Typical schematic of the end plug can be found below:



Tap on RJ45 connectors facing away from observer

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6 EMC and safety requirements

The DMX booster is fully compliant to the LVD and EMC directive of the European council, if used in a properly designed setup.

EMC requirements of the power supply:

The DMX booster is only intended to be used in lighting applications, and as such, the complete assembly of led unit and power supply needs to be fully compliant with the harmonized standards.

Immunity according to:

- EN 61547:2009 (General EMC immunity requirements lighting eq.)
- EN 61000-4-1:2006 (General immunity testing techniques)
- EN 61000-4-2:2008 (ESD immunity test)
- EN 61000-4-3:2006 + A1:2007 (Radiated immunity test)
- EN 61000-4-4:2004 (Fast transients and burst immunity)
- EN 61000-4-5:2005 (Surge immunity test)
- EN 61000-4-6:2008 (Conducted immunity test)
- EN 61000-4-8:1993 (Magnetic field immunity test)
- EN 61000-4-11:2004 (Voltage variations immunity test)
- EN 61000-6-1:2005 (Generic standards for immunity)

Emission according to:

- EN 61000-3-2:2005+A1:2008+A2:2009 (Harmonics emission test<16A)
- EN 61000-3-3:2008 (Flicker+ voltage changes limits< 16A)
- EN 55015:2006+A2:2009 (Conducted + radiated emission lighting equipment)

To achieve this compliance, a proper power supply must be supplied. In case of doubts, contact your point of sale.

LVD requirements of the power supply:

The DMX booster is only intended to be used in lighting applications, and as such, the complete assembly of led unit and power supply needs to be fully compliant with following harmonized standards:

- EN 60598: general requirements of lighting equipment.

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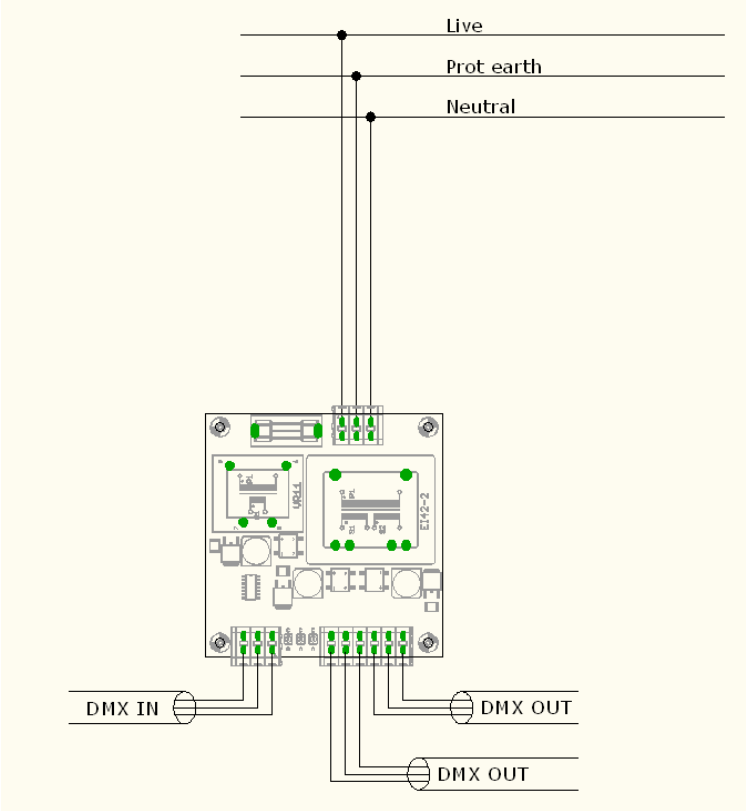
7 Installation setup

7.1 General description

The DMX booster is typically intended to distribute a DMX signal over two different cables. There are two "active" outputs. These DMX outputs are amplified and completely galvanic isolated from any other in/output. Each output can feed max 32 fixtures.

7.2 Typical layout

The wiring scheme below shows a typical layout when using the two DMX outputs.



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8 Service and maintenance

8.1 Safety precautions

Read carefully the safety information in this manual. Lock out the power on the entire system and allow all electronic devices to discharge, and cool down, before executing any service or maintenance.

8.2 Cleaning

DMX booster itself

Extensive dirt and particle build-up degrades performance and may cause overheating. This can result in damaged board and power supply's. Damage by inadequate cleaning or maintenance is not covered by the product warranty.

Never use solvents to clean the outer housing of the card.

Never use water or wet cloth.

Enclosure in which the DMX booster is integrated

Best is to use compressed air to remove dust or soft cloth to remove the dust in the cabinet. When using compressed air, care must be taken not to damage the fans in the enclosure. Never use solvents to clean the outer housing of the enclosure.

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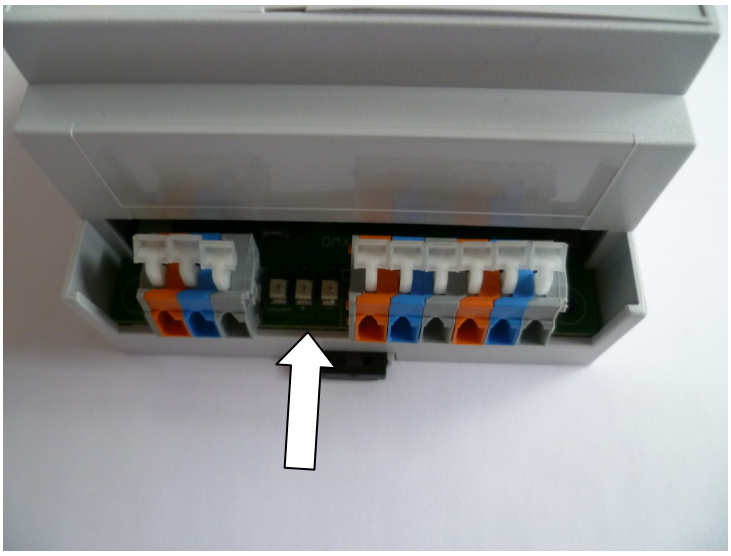
8.3 Monitoring

three led's are located between the DMX IN connectors and the DMX out connectors.



LED1 : red led - indicates power

LED2 : green led – lights up when (+) signal is high

LED3 : green led – lights up when (-) signal is high

Note: The green leds do not validate if the data is a valid DMX signal.

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9 Troubleshooting

Color of led	Status of led	Problem	Action
RED	On	Power is applied to the card.	Check the status of the green leds.
	Off	No power is applied to the card	Check the fuse and the incoming power supply
GREEN 1	On	The (+) data signal is high	Check the other green LED
	Off	There is no data on the (+) connection of DMX IN	Check the DMX IN signal
GREEN 2	On	The (-) data signal is high	Check the other green LED
	Off	There is no data on the (-) connection of DMX IN	Check the DMX IN signal

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10 Specifications

10.1 Electrical

Inputs

- 220-240 volt AC
- Maximum 4 watt power consumption.
- Power input on Cage clamp® for easy connection
- DMX input on Cage clamp® for easy connection
- Status led's for DMX and power input

Outputs

- 2 independent 'active' DMX outputs
- DMX outputs are amplified
- DMX outputs are completely galvanic isolated from any other in/output
- Each output can feed max 32 fixtures
- DMX outputs on Cage clamp® for easy connection
- The end of a DMX line should preferably be terminated with a 120ohm resistor between + and – of the DMX line.

10.2 Environmental

- IP rating: IP 20
- Humidity: 30% to 95%
- Ta (max): +40 °C (104 °F)
- Ta (min): -15 °C (+5 °F)
- Tc (max): +55 °C (131 °F)

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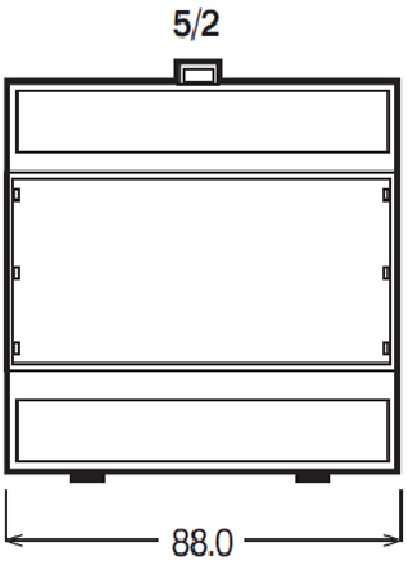
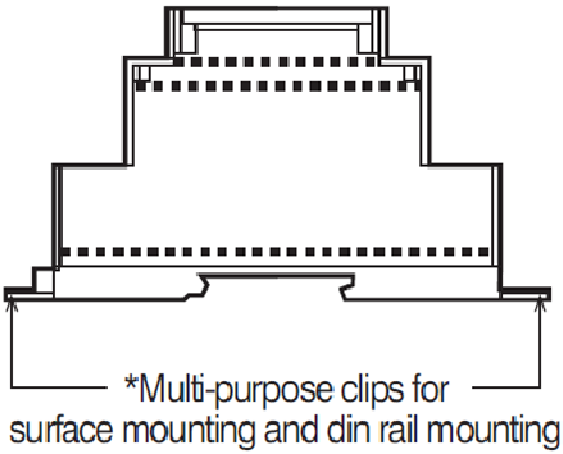
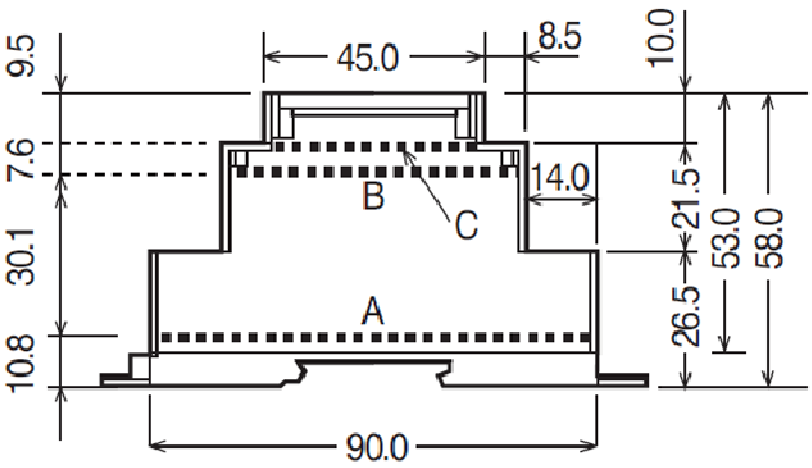
10.3 Mechanical

Physical dimensions of the card below:

Dimensions DMX booster	88x 90 x 58	mm
Dimensions packaging	230 x 230 x 130	mm
Weight DMX booster	375	gr
Weight packaging	500	gr







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11 Warranty

11.1 Application of warranty

Warranty period

Warranty service is valid for one year from the date of purchase by the consumer, as evidenced by invoice date given out by your point of sale.

Warranty service

Service under warranty can only be done by Lux Lumen.

Coördinaties:

Lux Lumen
Kernenergiestraat 53 A
2610 Wilrijk
Belgium

Any cost of secure transportation of the product to and from Lux Lumen service department, will be borne by the customer.

Limitations

Lux Lumen will not warrant the following:

- Periodic check-ups, maintenance and repair or replacement of parts due to normal wear and tear.
- Consumables
- Any software
- Defects caused by modifications carried out without Lux Lumen's approval.
- Damage resulting from the fact that a product is not conforming to country specific standards or specifications in another country that the country of purchase.

Costs incurred by Lux Lumen's service center in making any adoptions or modifications of a product necessary for country specific technical or safety standards or specifications, or any other cost to adjust the product as a result of any specifications which have changed since the delivery of the product.

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Warranty service is excluded if damage or defects have been caused by:

Improper use, extensive use, handling or operation of the product as referred to in the user manual or operator manual and/or relevant user documents, including without limitation, incorrect storage, dropping, excessive shocks, corrosions, dirt, water, or sand damage, if the product is not rated to be used in severe conditions, indicated by its IP and IK degree, mentioned in the product specifications in this manual.

Repairs, modifications or cleaning carried out by a non Lux Lumen service centre.

Use of spare parts, software or consumables, which are not compatible with the product.

Connecting the product to equipment not intended to be used with this product.

Defects caused by improper condition of the power supply network.

Inadequate packaging of the product when returning it under the RMA procedure.

Accidents or disasters or any cause beyond the control of Lux Lumen, including but not limited to lightning, water, fire, public disturbances, improper ventilation, and acts of god.

Others

It is the responsibility of the customer to backup and save any software files and programs before repair and to restore the same after such repair.

This warranty does not affect the consumer's statutory rights under applicable national legislation in force, nor the consumer's rights against the retailer arising from the sales/purchase contract. In the absence of applicable national legislation, this warranty will be the consumer's sole and exclusive remedy, and Lux Lumen cannot be liable for any incidental or consequential damages for breach of any express or implied warranty of this product.

For full details of the warranty offered on this product, please contact Lux Lumen's service center.

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11.2 RMA procedure

To send material back to Lux Lumen, you need a RMA (Return Material Authorization) document that you will receive from Lux Lumen.

Without the RMA document, we cannot accept the material.

The procedure to obtain a RMA:

Step 1:

Customer contacts Lux Lumen about warranty, defects if material has to be returned.

Step 2:

Lux Lumen sends the customer a filled out RMA document (using a unique RMA number)

Step 3:

Customer sends material (include a copy of the RMA document with the material)

Step 4:

Lux Lumen evaluates the problem, and informs the client if repair is done under warranty, or makes an offer to the client for repair.

Step 5:

The procedure related to lux lumen quality procedures, according ISO 9001 is started up.

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12 Used list of abbreviations

- DMX: digital multiplexed data signal to according to USITT
- PCB: printed circuit board
- PWM: Pulse width modulation
- CAT 5: category 5 cable
- CAT 6: category 6 cable
- U_f: Forward voltage of the LED junction
- AC: Alternating current
- DC: Direct current
- °F: Temperature in degrees Fahrenheit
- °C: Temperature in degrees Celsius
- din-rail: rail used in electrical installation according to 'Deutsche Industry Norm' specifications
- LED: Light Emitting Diode

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